

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

Date: October 31, 2005
To: Board of Governors
From: Donald L. Kohn
Subject: Private Sector Adjustment Factor for 2006

The Committee on Federal Reserve Bank Affairs has reviewed staff's recommendation that the Board adopt a 2006 Private Sector Adjustment Factor for Federal Reserve Bank priced services of \$117.7 million. I am forwarding the attached staff memorandum to the Board for consideration at its November 2 meeting.

Attachment

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

DIVISION OF RESERVE BANK OPERATIONS AND PAYMENT SYSTEMS

Date: October 31, 2005

To: Board of Governors

From: Jonathan Mueller, Brenda Richards, Gregory L. Evans, Dorothy LaChapelle, and Paul Bettge

Subject: Private Sector Adjustment Factor for 2006

ACTION REQUESTED

Staff requests Board approval of its recommendation to adopt a 2006 Private Sector Adjustment Factor (PSAF) for Federal Reserve priced services of \$117.7 million. This amount represents a decrease of \$43.3 million, or 26.9 percent, from the 2005 PSAF of \$161.0 million. This decrease is primarily because of the recent change in the method used to derive the target return on equity (ROE).

BACKGROUND

Each year, as required by the Monetary Control Act of 1980, the Reserve Banks set fees for priced services provided to depository institutions. These fees are set to recover, over the long run, all direct and indirect costs and imputed costs, including financing costs, taxes, and certain other expenses, as well as return on equity (profit) that would have been earned if a private business firm provided the services. The imputed costs and imputed profit are collectively referred to as the PSAF. In a comparable fashion, investment income is imputed and netted with related direct costs associated with clearing balances to estimate net income on clearing balances (NICB).

Private Sector Adjustment Factor

The method for calculating the financing and equity costs in the PSAF requires determining the appropriate levels of debt and equity to impute and then applying the applicable financing rates. In this process, a pro forma priced services balance sheet using estimated Reserve Bank assets and liabilities associated with priced services is developed and the remaining elements that would exist if the Reserve Banks' priced services were provided by a private business firm are imputed.

The amount of the Reserve Banks' assets that will be used to provide priced services during the coming year is determined using Reserve Bank information on actual assets and projected disposals and acquisitions. The priced portion of assets is determined based on the allocation of the related depreciation expense. The priced portion of actual Reserve Bank liabilities consists of balances held by Reserve Banks for clearing priced services transactions (clearing balances), and other liabilities such as accounts payable and accrued expenses.

Long-term debt is imputed only when core clearing balances and long-term liabilities are not sufficient to fund long-term assets or if the interest rate risk sensitivity analysis, which measures the interest rate effect of the difference between interest rate sensitive assets and liabilities, indicates that a 200 basis point change in interest rates would change cost recovery more than two percentage points.¹ Short-term debt is imputed only when short-term liabilities and clearing balances not used to finance long-term assets are insufficient to fund short-term assets. Equity is imputed to meet the FDIC definition of a well-capitalized depository institution for insurance premium purposes.²

Financing rates

Equity financing rates are based on the target ROE result of the capital asset pricing model (CAPM).³ In the CAPM, the required rate of return on a firm's equity is equal to the return on a risk-free asset plus a risk premium. To implement CAPM, the risk-free rate is based on the three-month Treasury bill, the beta is assumed to be equal to 1.0, which approximates the risk of the

¹ A portion of clearing balances is used as a funding source for priced services assets. Long-term assets are partially funded from core clearing balances, currently \$4 billion. Core clearing balances are considered the portion of the balances that has remained stable over time without regard to the magnitude of actual clearing balances.

² The FDIC requirements for a well-capitalized depository institution are 1) a ratio of total capital to risk-weighted assets of 10 percent or greater; and 2) a ratio of Tier 1 capital to risk-weighted assets of 6 percent or greater; and 3) a leverage ratio of Tier 1 capital to total assets of 5 percent or greater. The Federal Reserve priced-services balance sheet total capital has no components of Tier 1 or total capital other than equity; therefore, requirements 1 and 2 are essentially the same measurement.

³ In October, the Board approved changes to the methodology used to derive the pretax ROE from using the average of the results of three analytical models, the comparable accounting earnings model (CAE), the discounted cash-flow model (DCF), and the CAPM, to using only the CAPM (70 FR 60341, October 17, 2005).

market as a whole, and the monthly returns in excess of the risk-free rate over the most recent 40 years are used as the market risk premium. The resulting ROE influences the dollar level of the PSAF because this is the return a shareholder would expect in order to invest in a private business firm.

For simplicity, given that federal corporate income tax rates are graduated, state income tax rates vary, and various credits and deductions can apply, a specific income tax expense is not calculated for Reserve Bank priced services. Instead, the Board targets a pretax ROE that would provide sufficient income to fulfill its income tax obligations.⁴ To the extent that the actual performance results are greater or less than the targeted ROE, income taxes are adjusted using an imputed income tax rate. The imputed income tax rate is the median of the rates paid by the top fifty bank holding companies (BHCs) based on deposit balance over the past five years adjusted to the extent that they invested in tax-free municipal bonds. Because the Reserve Banks provide similar services through their correspondent banking activities, including payment and settlement services, and equity is imputed to meet the FDIC requirements of a well-capitalized depository institution, using a tax rate based on the top fifty BHCs by deposit balance continues to be an applicable and reasonable approach.

Other Costs

The PSAF also includes the estimated priced services-related expenses of the Board of Governors and imputed sales taxes based on Reserve Bank estimated expenditures. An assessment for FDIC insurance, when required, is imputed based on current FDIC rates and projected clearing balances held with the Federal Reserve.

Net Income on Clearing Balances

The NICB calculation is made each year along with the PSAF calculation and is based on the assumption that Reserve Banks invest clearing balances net of imputed reserve requirements and balances used to finance priced-services assets. Based on these net clearing balance levels, Reserve Banks impute a constant spread, determined by the return on a portfolio

⁴ Other taxes are included in priced-services actual or imputed costs.

of investments, over the three-month Treasury bill rate.^{5, 6} The calculation also involves determining the priced services cost of earnings credits (amounts available to offset service fees) on contracted clearing balances held, net of expired earnings credits, based on a discounted Treasury bill rate.⁷ Rates and clearing balance levels used in the NICB estimate are based on the most recent rates and clearing balance levels.⁸ Because clearing balances are held for clearing priced services transactions or offsetting priced services fees, they are directly related to priced services. The net earnings or expense attributed to the investments and the cost associated with holding clearing balances, therefore, are considered net income for priced services activities.

DISCUSSION

The decrease in the 2006 PSAF is primarily due to the decrease in ROE, which results in a decrease in the cost of equity. Although clearing balances on which investments are imputed decreased, a similar offsetting increase in items in process of collection results in a small increase in total assets. Because equity is imputed at 5 percent of total assets, this small change in assets causes equity to remain unchanged from 2005.

Asset Base

The estimated 2006 Federal Reserve assets, reflected in table 1, have increased \$0.3 million. The decline in imputed investments in marketable securities of \$546.0 million and in imputed reserve requirements of \$69.7 million, which are imputed based on the estimated level of clearing balances held, are offset by an increase in items in process of collection due to higher estimated float receivables. As a result of consolidation and restructuring of several System priced services functions, furniture and equipment and bank premises assets are expected to decrease \$59.5 million in 2006.

As shown in table 2, the assets financed through the PSAF have decreased. Short-term assets funded with short-term payables and clearing balances total \$28.4 million. This represents a \$10.5 million decrease from the short-term assets funded in 2005 due to an increase in expected short-term payables. Long-term assets funded with long-term liabilities, equity, and core

⁵ The investment portfolio is composed of investments comparable to a BHC's investment holdings, such as short-term Treasury securities, government agency securities, commercial paper, long-term corporate bonds, and money market funds. See table 5 for the investments imputed in 2006.

⁶ NICB is projected to be \$102.8 million for 2006 using a constant spread of 35 basis points over the three-month Treasury bill, and applying this rate to the clearing balance levels used in the 2006 pricing process. The 2005 NICB estimate is \$73.8 million.

⁷ See attachment I of staff memo on Proposed 2006 Fee Schedules for Priced Services, which describes the earnings credit rate calculation at 80 percent of the rolling thirteen-week average of the annualized coupon equivalent yield of the three-month Treasury bill in the secondary market.

⁸ July 2005 rates and balances were used to estimate the 2006 NICB.

clearing balances are projected to total \$291.1 million. This represents a decrease of \$70.6 million from the long-term assets funded in 2005 because long-term assets have decreased.

Debt and Equity Costs and Taxes

As previously mentioned, core clearing balances are available as a funding source for priced service assets. Table 2 shows that \$319.5 million in clearing balances is used to fund priced services assets in 2006. The interest rate sensitivity analysis in table 3 indicates that a 200 basis point decrease in interest rates affects the ratio of rate-sensitive assets to rate-sensitive liabilities and produces a decrease in cost recovery of 1.2 percentage points, while an increase of 200 basis points in interest rates increases cost recovery by 1.1 percentage points. The established threshold for a change in cost recovery is two percentage points; therefore, interest rate risk associated with using these balances is within acceptable levels and no long-term debt is imputed.

Table 4 shows the imputed PSAF elements, the pretax ROE, and other required PSAF costs for 2005 and 2006. The decrease in ROE lowers the estimated cost of equity in 2006. Sales taxes decreased from \$8.2 million in 2005 to \$7.7 million in 2006. The effective income tax rate used in 2006 increased to 29.8 percent from 29.6 percent in 2005. The priced service portion of the Board's expenses increased \$0.9 million from \$6.6 million in 2005 to \$7.5 million in 2006.

Capital Adequacy and FDIC Assessment

As shown in table 1, the amount of equity imputed for the proposed 2006 PSAF is \$808.0 million, unchanged from the imputed equity in 2005. As noted above and shown in table 5, equity is based on 5 percent of total assets and is greater than 10 percent of risk-weighted assets, as required by the FDIC definition of a well-capitalized depository institution for insurance premium purposes. In 2006, the capital to total assets ratio and the capital to risk-weighted asset ratio both meet or exceed regulatory guidelines. As a result, no FDIC assessment is imputed for 2006.

Attachments

Table 1
Comparison of Pro Forma Balance Sheets
for Federal Reserve Priced Services
(millions of dollars – average for year)

	<u>2006</u>	<u>2005</u>	<u>Change</u>
Short-term assets			
Imputed reserve requirement on clearing balances	\$ 986.9	\$ 1,056.6	\$ (69.7)
Receivables	67.0	64.9	2.1
Materials and supplies	1.0	1.7	(0.7)
Prepaid expenses	26.8	28.5	(1.7)
Items in process of collection ¹	5,126.7	4,445.8	680.9
Total short-term assets	<u>6,208.4</u>	<u>5,597.5</u>	<u>610.9</u>
Imputed investments	\$ 8,562.6	\$ 9,108.6	\$ (546.0)
Long-term assets			
Premises ²	385.8	394.9	(9.1)
Furniture and equipment	122.7	173.1	(50.4)
Leasehold improvements and long-term prepayments	84.6	79.7	4.9
Prepaid pension costs	796.0	806.0	(10.0)
Total long-term assets	<u>1,389.1</u>	<u>1,453.7</u>	<u>(64.6)</u>
Total assets	<u>\$ 16,160.1</u>	<u>\$ 16,159.8</u>	<u>\$ 0.3</u>
Short-term liabilities³			
Clearing balances and balances arising from early credit of uncollected items	\$ 9,801.5	\$ 10,620.6	\$ (819.1)
Deferred credit items ¹	5,194.2	4,391.0	803.2
Short-term payables	66.4	56.2	10.2
Total short-term liabilities	<u>15,062.1</u>	<u>15,067.8</u>	<u>(5.7)</u>
Long-term liabilities³			
Postemployment/retirement benefits	<u>290.0</u>	<u>284.0</u>	<u>6.0</u>
Total liabilities	<u>15,352.1</u>	<u>15,351.8</u>	<u>0.3</u>
Equity	<u>808.0</u>	<u>808.0</u>	<u>0.0</u>
Total liabilities and equity	<u>\$ 16,160.1</u>	<u>\$ 16,159.8</u>	<u>\$ 0.3</u>

¹ Represents float that is directly estimated at the service level.

² Includes allocations of Board of Governors' assets to priced services of \$1.4 million for 2005 and 2006.

³ No debt is imputed because clearing balances are used as an available funding source.

Table 2
Portion of Clearing Balances used
to Fund Priced Services Assets
(millions of dollars)

	<u>2006</u>	<u>2005</u>
A. Short-term asset financing		
Short-term assets to be financed:		
Receivables	\$ 67.0	\$ 64.9
Materials and supplies	1.0	1.7
Prepaid expenses	26.8	28.5
Total short-term assets to be financed	<u>\$ 94.8</u>	<u>\$ 95.1</u>
Short-term funding sources:		
Short-term payables	<u>66.4</u>	<u>56.2</u>
Portion of short-term assets funded with clearing balances ¹	\$ 28.4	\$ 38.9
B. Long-term asset financing		
Long-term assets to be financed:		
Premises	\$ 385.8	\$ 394.9
Furniture and equipment	122.7	173.1
Leasehold improvements and long-term prepayments	84.6	79.7
Prepaid pension costs	796.0	806.0
Total long-term assets to be financed	<u>\$ 1,389.1</u>	<u>\$ 1,453.7</u>
Long-term funding sources:		
Postemployment/retirement benefits	290.0	284.0
Imputed equity ²	808.0	808.0
Total long-term funding sources	<u>\$ 1,098.0</u>	<u>\$ 1,092.0</u>
Portion of long-term assets funded with core clearing balances ¹	<u>\$ 291.1</u>	<u>\$ 361.7</u>
C. Total clearing balances used for funding priced-services assets	<u>\$ 319.5</u>	<u>\$ 400.6</u>

¹ Clearing balances shown on table 1 are available for financing priced-services assets. Using these balances reduces the amount available for investment for the NICB calculation. Long-term assets are financed with long-term liabilities and with core clearing balances; a total of \$4 billion in balances is available for this purpose. Short-term assets are financed with clearing balances not used to finance long-term assets. No short- or long-term debt is imputed.

² See table 4 for calculation of required imputed equity amount.

Table 3
2006 Interest Rate Sensitivity Analysis¹
(millions of dollars)

	Rate sensitive	Rate insensitive	Total
Assets			
Imputed reserve requirement on clearing balances		\$ 986.9	\$ 986.9
Imputed investments	\$ 8,562.6		8,562.6
Receivables		67.0	67.0
Materials and supplies		1.0	1.0
Prepaid expenses		26.8	26.8
Items in process of collection ²	(67.5)	5,194.2	5,126.7
Long-term assets		1,389.1	1,389.1
Total assets	\$ 8,495.1	\$ 7,665.0	\$ 16,160.1
Liabilities			
Clearing balances and balances arising from early credit of uncollected items ³	\$ 7,762.6	\$ 2,038.9	\$ 9,801.5
Deferred credit items		5,194.2	5,194.2
Short-term payables		66.4	66.4
Long-term liabilities		290.0	290.0
Total liabilities	\$ 7,762.6	\$ 7,589.5	\$ 15,352.1
Rate change results		200 basis point decrease in rates	200 basis point increase in rates
Asset yield (\$8,495.1 x rate change)		\$ (169.9)	\$ 169.9
Liability cost (\$7,762.6 x rate change)		(155.3)	155.3
Effect of 200 basis point change		\$ (14.6)	\$ 14.6
2006 budgeted revenue		\$ 911.1	\$ 911.1
Effect of change		(14.6)	14.6
Revenue adjusted for effect of interest rate change		\$ 896.5	\$ 925.7
2006 budgeted total expenses		\$ 762.0	\$ 762.0
2006 budgeted PSAF		127.1	127.1
Tax effect of interest rate change (\$ change x 29.8%)		(4.4)	4.4
Total recovery amounts		\$ 884.7	\$ 893.5
Recovery rate before interest rate change		102.5 %	102.5%
Recovery rate after interest rate change		101.3 %	103.6%
Effect of interest rate change on cost recovery ⁴		(1.2)%	1.1%

¹ The interest rate sensitivity analysis evaluates the level of interest rate risk presented by the difference between rate-sensitive assets and liabilities. The analysis reviews the ratio of rate-sensitive assets to rate-sensitive liabilities and the effect on cost recovery of a change in interest rates of up to 200 basis points.

² The amount designated rate sensitive represents the amount of cash items in process of collection that have been credited to customers prior to settlement.

³ The amount designated rate insensitive represents clearing balances on which earnings credits are not paid.

⁴ The effect of a potential change in rates is less than a 2 percentage point change in cost recovery; therefore, no long-term debt is imputed for 2006.

Table 4
Derivation of the 2006 and 2005 PSAF
(millions of dollars)

	<u>2006</u>		<u>2005</u>	
A. Imputed elements				
Short-term debt ¹	\$	0.0	\$	0.0
Long-term debt ²	\$	0.0	\$	0.0
Equity				
Total assets from table 1	\$	16,160.1	\$	16,159.8
Required capital ratio ³		<u>5%</u>		<u>5%</u>
Total equity	\$	808.0	\$	808.0
B. Cost of capital				
1. Financing rates/costs				
Short-term debt		N/A		N/A
Long-term debt		N/A		N/A
Pretax return on equity		12.7%		18.1%
2. Elements of capital costs				
Short-term debt		\$ 0.0		\$ 0.0
Long-term debt		0.0		0.0
Equity ⁴	\$ 808.0 x	12.7% = <u>102.5</u>	\$ 808.0 x	18.1% = <u>146.2</u>
		\$ 102.5		\$ 146.2
C. Other required PSAF costs				
Sales taxes	\$	7.7	\$	8.2
Federal Deposit Insurance assessment		0.0		0.0
Board of Governors expenses		<u>7.5</u>		<u>6.6</u>
		15.2		14.8
D. Total PSAF		<u>\$ 117.7</u>		<u>\$ 161.0</u>
As a percent of assets		0.7%		1.0%
As a percent of expenses ⁵		15.8%		22.2%
E. Tax rates		29.8%		29.6%

¹ No short-term debt is imputed because clearing balances are used as a funding source for those assets that are not financed with short-term payables.

² No long-term debt is imputed because clearing balances are used as a funding source.

³ Based on the Federal Deposit Insurance Corporation's definition of a well-capitalized institution for purposes of assessing insurance premiums.

⁴ As a result of the change in ROE methodology, the 2006 ROE is equal to a risk-free rate plus a risk premium (beta*market risk premium). The 2006 after-tax CAPM ROE is calculated as 3.33% + (1*5.58%) = 8.91%. Using a tax rate of 29.8%, the after-tax ROE is converted into a pretax ROE, which results in a pretax ROE of 12.69%.

⁵ System 2006 budgeted priced services expenses less shipping are \$743.8 million.

Table 5
Computation of 2006 Proposed Capital Adequacy
for Federal Reserve Priced Services
(millions of dollars)

	Assets	Risk weight	Weighted assets
Imputed reserve requirement on clearing balances	\$ 986.9	0.0	\$ 0.0
Imputed investments:			
1 – year Treasury note ¹	4,188.4	0.0	0.0
Commercial paper (3 months) ¹	4,073.7	1.0	4,073.7
GNMA mutual fund ²	300.5	0.2	60.1
	<u>\$ 9,549.5</u>		<u>\$ 4,133.8</u>
Receivables	67.0	0.2	13.4
Materials and supplies	1.0	1.0	1.0
Prepaid expenses	26.8	1.0	26.8
Items in process of collection	5,126.7	0.2	1,025.3
Premises	385.8	1.0	385.8
Furniture and equipment	122.7	1.0	122.7
Leases, leasehold improvements & long-term prepayments	84.6	1.0	84.6
Prepaid pension costs	<u>796.0</u>	1.0	<u>796.0</u>
Total	<u><u>\$ 16,160.1</u></u>		<u><u>\$ 6,589.4</u></u>
Imputed equity for 2006	\$ 808.0		
Capital to risk-weighted assets	12.3 %		
Capital to total assets	5.0 %		

¹ The imputed investments are assumed to be similar to those for which rates are available on the Federal Reserve's H.15 statistical release, which can be located at <http://www.federalreserve.gov/releases/h15/data.htm>.

² The imputed mutual fund investment is based on Vanguard's GNMA Fund Investor Shares fund, which was chosen based on the investment strategies articulated in its prospectuses. The fund returns can be located at <http://flagship4.vanguard.com/VGApp/hnw/FundsByType>.